

REMARKS

Preliminarily, Applicants thank Examiners Helm and Switzer for the personal interview conducted with the undersigned on January 19, 2011. Applicants believe that the interview was helpful in advancing the prosecution of the present application. A Statement of Substance of Interview is submitted herewith.

Based on the comments made during the interview, Applicants submit herewith an executed Rule 132 Declaration including the experimentation set forth initially in the Amendment filed December 28, 2011, as well as comments presented in that Amendment.

The Declaration demonstrates that a honeycomb film could not be prepared by using cholesterol, an amphiphilic molecule.

In this regard, the Declarant notes that if the Examiner were correct in that any amphiphilic molecule can be used to form the honeycomb structure of the present invention or Maruyama et al., it is deduced that one can prepare a honeycomb structure by using cholesterol, an amphiphilic molecule. See page 559 of Reference Material 2 ("Intermolecular and Surface Forces") attached to the Declaration..

However, according to the experimentation shown in the Declaration, a honeycomb structure of the present invention cannot be prepared by using cholesterol as an amphiphilic molecule. This means the Examiner's inference that the honeycomb structure can be prepared by utilizing any amphiphilic molecule is incorrect.

In Experiment 1 in the Declaration, a chloroform solution of polylactic acid (molecular weight: 100,000) (5 g/L) was mixed with cholesterol as a surfactant in a ratio of 10:1. The mixture was cast on a glass plate and allowed to stand under a condition at room temperature and at a humidity of 70%. The solvent was gradually evaporated off for preparing a honeycomb

structure. Namely, the preparation condition was completely identical to the examples of the present description except for the amphiphilic molecule used. However, the resultant film did not have a honeycomb structure. PowerPoint Fig. 3 attached to the Declaration is an optical photomicrograph of the film.

In Experiment 2 in the Declaration, a chloroform solution of polylactic acid (molecular weight: 100,000) (5 g/L) was mixed with cholesterol as a surfactant in a ratio of 200:1. The mixture was cast on a glass plate and allowed to stand under a condition at room temperature and at a humidity of 70%. The solvent was gradually evaporated off for preparing a honeycomb structure. However, the resultant film did not have a honeycomb structure. PowerPoint Fig. 4 attached to the Declaration is an optical photomicrograph of the film.

Thus, the Declarant concludes that **the formation of a honeycomb structure is unpredictable and depends on the type of amphiphilic molecule used.** Further, the Declarant concludes that **a skilled artisan considering the cited art would not have been able to predict that DOPE in Johnsson and Huang, which forms a cylindrical structure with infinite length in water, could be used to form a honeycomb structure as in the present invention.**

Moreover, Applicants have the following additional comments on the non-obviousness of the present invention.

Applicants note that the Examiner has indicated that Maruyama et al. teach that self-assembling molecules that form three-dimensional nanoscale structures **are combined with polymers** to form microscale features in structured films (see, e.g., the last full sentence on page 4 of the September 28, 2011 Office Action; emphasis added).

However, Applicants have the following comments on the Examiner's indication.

- i) While Maruyama does teach polyion complexes form microscopic structure by external force such as surface tension, Maruyama never teaches that self-assembling molecules (polyion complexes) form microscale features by combination with polymers,
- ii) If the "combination" means covalent bonding, in the present invention, biodegradable polymer and phospholipid are not covalently bonded. Alternatively, if the "combination" means blending, polyion complexes are not blended material but polymers per se. Applicants submit that prior to the present invention, there had not been any honeycomb films made from a mixture of polymer and low molecular weight compound as in the present invention.

Based on the remarks of record, the Declaration evidence submitted herewith, and the remarks herein, Applicants submit that the present invention is not obvious over the cited art. Accordingly, withdrawal of the obviousness rejections is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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